On a new species of sea anemone from Maharashtra, India

BY

ARUN PARULEKAR

Senior Research Fellow (C.S.I.R.), Bombay Natural History Society, Bombay-1

(*With four text-figures*)

Anthopleura panikkarii a new species of intertidal sea anemone from India is described. Detailed notes on ecology, external morphology and anatomy are given.

The paper describes a new intertidal sea anemone collected from Vengurla Port, Ratnagiri (Mirkarwadi) and Bandra Point, Bombay, along the coast of Maharashtra, India, during 1966-68. It was first identified as the Japanese species, *Anthopleura midori* (Uchida 1958), which has been reported from Bombay by Parulekar (1968). However, observations on a large number of living specimens showed it to be an undescribed species. The new species is named after Dr. N. K. Panikkar, in recognition of his valuable contributions to actinian research in India.

Anthopleura panikkarii sp.nov.

(Text-figures 1-4)

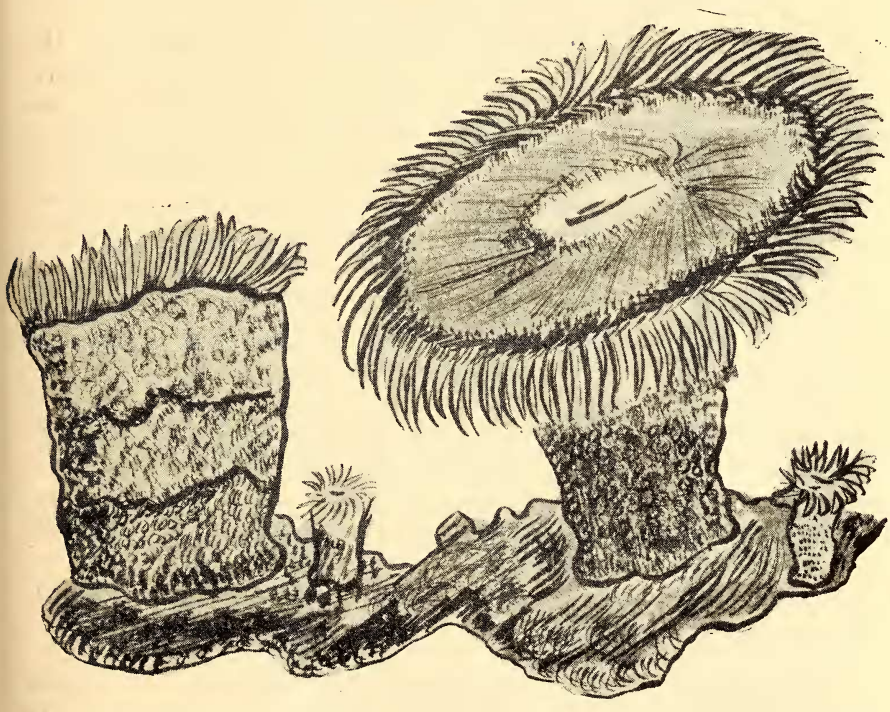
Material : Holotype (Reg. No. P 1858/1) in the collections of the Zoological Survey of India, Calcutta, collected at Vengurla Port (15° 51′N., 73° 37′E.), Maharashtra, India in April 1967. Paratypes : Five specimens collected from Vengurla Port, Ratnagiri; Bandra Point, Bombay (Maharashtra) and Kalangut (Goa). These will also be deposited in the collections of the Zoological Survey of India, Calcutta.

Diagnosis : Actiniidae with well-developed basal disc, column with adhesive verrucae arranged in more or less distinct longitudinal rows, especially, in its upper part. Marginal spherules (acrorhagi) present. Sphincter weak or strong, restricted to circumscript. Tentacles simple, hexamerously or irregularly arranged, their longitudinal muscles ectodermal or meso-ectodermal. Numerous perfect mesenteries, all the stronger ones, fertile. Retractors of the strong mesenteries diffuse,

sometimes restricted. Younger mesenteries growing from the basal disc upwards. Cnidom : Spirocysts, basitrichs, holotrichs, microbasic p-mastigophores.

Description

General features : A medium-sized anemone found firmly attached to sheltered side of rocks, in the upper marginal zone. Some specimens inhabit crevices of rocks. The characteristic feature of this actinian is the presence of green verruciform suckers on its column. In its habitat, the anemone frequently bears gravel and shell-fragments on its body. When contracted, it is cone-shaped, with an irregularly spreading base.



Text-fig. 1 : *Anthopleura panikkarii* sp. nov. : Showing the habitat.

Size : Shape and dimensions variable, depending on the state of expansion. A well-expanded specimen, is about 40 mm. in height and 27 mm. in width. The size-range for the species, based on measurements of 30 specimens, is as follows : length of column 10-40 mm. ; diameter of column 9-28 mm. ; diameter of oral disc 7-32 mm. ; diameter of basal disc 5-30 mm.

Colour : Column brick-red with dirty-green verruciform suckers,

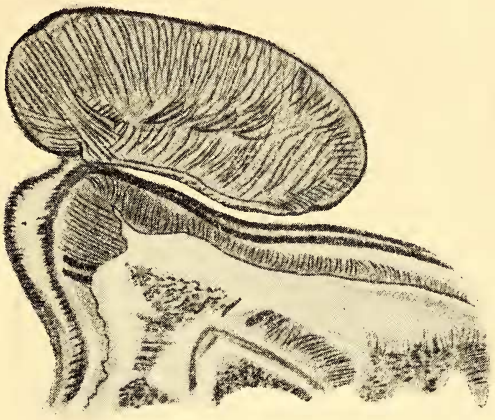
Marginal spherules pinkish or flesh-coloured. Tentacles uniformly blood-red. Oral disc red with greenish tinge. Basal disc flesh-coloured.

Basal or pedal disc : In live specimens, firm, well-developed and more or less irregular in outline when contracted, and rounded, when expanded. Rounded or oval in a well-preserved specimen. It is only in a contracted living specimen that its diameter is greater than that of the column or oral disc.

Column : It assumes different shapes, depending on the state of contraction or expansion. When contracted, it becomes cone-shaped or dome-like with upper part thickly covered by verruciform suckers. In a fully-extended condition, the anemone is pillar-like with narrow basal part and broad distal part. When elongated, the column is long and cylindrical, its height being more than twice the diameter. The gravel and shell-fragments are borne only on the upper part. Ectoderm cells are cylindrical and vesiculated. Endoderm cells rather low, cylindrical and filled with black granules. *Verrucae* : The column is studded with papillated verruciform suckers, arranged in 96 longitudinal rows swollen and cone-shaped in a fully expanded live specimen but long and papillose in preserved ones. They are densely set in the upper part, but are sparse near the base. The uppermost suckers, are the largest, possessing a pit in the centre. In a contracted specimen, the suckers near the oral disc form a dense ' Papillose collar ', thus completely concealing the acrorhagi. In young anemones, the verruciform suckers are seen only in the upper part of the column. *Acrorhagi* or *Marginal spherules* : The upper limit of the column is marked by the presence of acrorhagi or marginal spherules, which are pinkish or flesh-coloured in the living anemone. In a well-grown anemone, they are lobed in appearance. The number varies from individual to individual but in a well-grown specimen, there are 48 of them. The basal part of the acrorhagi is vacuolated and slightly glandular, but the distal part is closely set with long spirocysts.

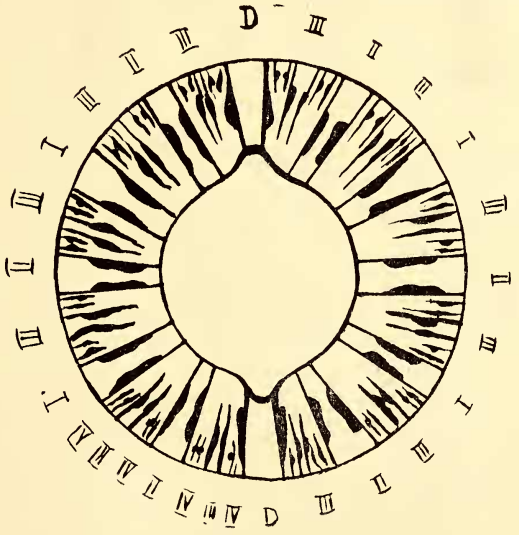
Oral disc and Tentacles : Rounded to oval in shape, with diameter more or less equal to that of the column but always more than that of the basal disc. An elliptical mouth, with two siphonoglyphs, marks the centre of the oral disc. Tentacles arranged in 5 cycles in a hexamerous plan of $6+6+12+24+48=96$. Broad at the base and gradually taper towards the tip. Nearly equal in length except for the outermost cycle, which are slightly shorter. Tentacles of the two inner cycles are, during expansion, held in an upright position while the others, especially, those of the outermost cycle (Vth) are either curved, outwards or downwards. Muscles of the tentacle are ectodermal and sparsely branched. Endodermal muscles with numerous foldings, occur in the oral disc. Marginal

sphincter (Text-fig. 2) well-developed, almost oval in shape asymmetrically circumscribed, pedunculate pinnate, with numerous foldings.



Text-fig. 2 : *Anthopleura panikkarii* sp. nov. : Marginal sphincter in radial section.

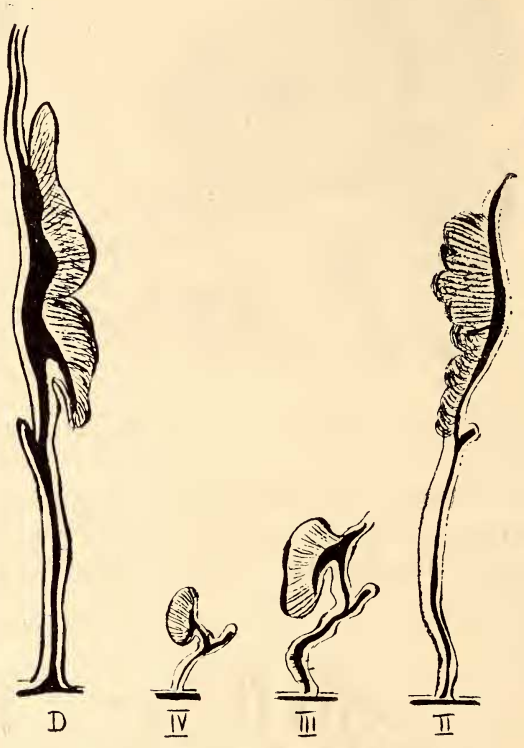
Mesenteries : Hexamerously arranged in four cycles of 6+6+12+24=48 pairs, of which two are directives (Text-fig. 3). The first two cycles are perfect. All mesenteries, except directives are provided with



Text-fig. 3 : *Anthopleura panikkarii* sp. nov. : Mesenterical arrangements (diagrammatic).

filaments, and are fertile. They have well-developed longitudinal muscles, which are diffuse, circumscribed. The muscle pennons of the directives

give rise to a number of foldings (Text-fig. 4). The muscle foldings of the first and the second cycle of mesenteries are narrow with a long extension possessing shallow foldings. Those of the third cycle are rather



Text-fig. 4 : *Anthopleura panikkarii* sp. nov. : Sections of mesenteries.

circumscribed, and of the fourth often crescentic. In the lower part, the parietobasilar and the basilar muscles are well-developed.

Cnidom : The distribution and size (in microns) of nematocysts, are as follows :—

Tentacles :—	
Spirocysts	9·8-25·2×2·1-3·5
Basitrichs	18·2-19·6×2·1
Body-wall	
Basitrichs	7·9-15·5×1·4-2·2
Holotrichs	12·6-16×1·4
Microbasic- p-mastigophores	15·4-19·6×2·8-3·5
Acrorhagi	
Basitrichs	9·8-16·8×1·4-2·1
Spirocysts	14·0-23·8×2·1-2·8
Holotrichs	36·4-53·2×2·4-5·6

Septal filaments

Basitrichs	.. .. ..	15·4-19·6×2·8-3·5
Microbasic p-mastigophores	.. ..	17·5-19·6×3·5-4·2
Microbasic p-mastigophores	.. ..	26·6-29·4×2·8-4·2

Remarks: This actinian closely resembles, *Anthopleura midori*, the 'Green Sea Anemone' of Japan, described by Uchida (1958). They resemble in habitat, presence of green verruciform suckers, similar type of mesenterial arrangement etc., but differ in coloration, structure of marginal sphincter in section, presence of acrorhagi in all stages of growth and the distribution and size of nematocysts.

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